Remarks

In the Office Action dated November 20, 2002, the Examiner objected to claims 1-23 for a number of informalities. The Examiner rejected claims 1, 2, 4, 6-18 and 20-23 under 35 U.S.C. § 102 as being anticipated by the publication entitled "Geometric Stress Compensation For Enhanced Thermal Stability in Micromechanical Resonators". The Examiner rejected claims 3, 5 and 19 under 35 U.S.C. § 103 as being unpatentable over the publication entitled "Geometric Stress Compensation For Enhanced Thermal Stability in Micromechanical Resonators" in view of the publication entitled "Micromachining Technologies for Miniaturized Communication Devices".

By this Amendment, Applicants' Attorney has amended each of the independent claims of the application to more particularly point out and distinctly claim what Applicants regard as their invention. In particular, each of the independent claims has been amended to make it clear that the support structure includes a first support member and a second support member for coupling the first support member to the resonator wherein the first support member and the resonator have different effective lengths.

Clearly, this feature is neither taught, disclosed nor discussed by any of the prior art references of record taken either alone or in combination with one another.

For example, the folded beam micromechanical resonator of the article entitled "Geometric Stress Compensation For Enhanced Thermal Stability in Micromechanical Resonators" fails to disclose the particular support structure now recited in each of the independent claims. More particularly, the arms of the folded beam micromechanical resonator of this article should not be considered stress-generating support members inasmuch as such arms vibrate at the resonant frequency of the device.

Consequently, in view of the above and in the absence of better art, Applicants' Attorney respectfully submits the application is in condition for allowance which allowance is respectfully requested.

A check in the amount of $64.00 is enclosed to cover the Petition fee of $55.00 and the additional claim filing fee of $9.00. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose.

Respectfully submitted,

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By _____

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Date: March 20, 2003

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Attachment

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims

1. (Amended) A temperature-compensated, micromechanical resonator device comprising:

a substrate;

a flexural-mode resonator having first and second ends; and

a temperature-compensating support structure [separate from the resonator and] anchored to the substrate to support the resonator at the first and second ends above the substrate wherein [both the resonator and a support structure are dimensioned and positioned relative to one another] the support structure includes a first support member and a second support member for coupling the first support member to the resonator, and wherein the first support member and the resonator have different effective lengths so that the resonator has enhanced thermal stability.

4. The device as claimed in claim 2 further comprising a sense electrode structure formed on the substrate at a position to sense output current based on motion of the resonator wherein the resonator and the sense electrode structure define a second gap therebetween.

20. (Amended) A micromechanical resonator device having a frequency versus temperature curve, the device comprising:

a substrate;

a flexural-mode resonator having first and second ends; and

a support structure [separate from the resonator and] anchored to the substrate to support the resonator at the first and second ends above the substrate wherein [both the resonator and a support structure are dimensioned and positioned relative to one another] the support structure includes a first support member and a second support member for coupling the first support member to the resonator, and wherein the first support member and the resonator have different effective lengths so that the frequency versus temperature curve is specifically tailored.

23. (Amended) A micromechanical resonator device comprising:

a substrate;

a flexural-mode resonator having first and second ends; and

a support structure [separate from the resonator and] anchored to the substrate to support the resonator at the first and second ends above the substrate wherein [both the resonator and a support structure are dimensioned and positioned relative to one another] the support structure includes a first support member and a second support member for coupling the first support member to the resonator, and wherein the first support member and the resonator have different effective lengths so that the device has a substantially zero temperature coefficient temperature at which the device may be biased.